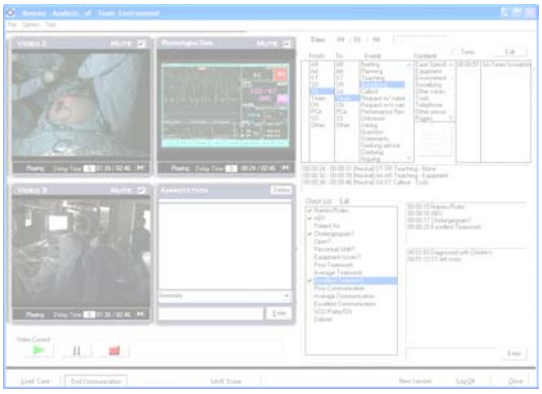
Remote Analysis of Team Environments (RATE)
Software User's Manual



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Introduction

RATE (Remote Analysis of Team Environment) is a software program written in Visual Basic which provides different methods to record and score team performance. All scored events and subjects can be amended quickly to fulfill different requirements. The functions of RATE are as follows:

1. Set Up and Score New Cases
    - Setup categories and weights of scoring information
    - Summarize conversations (who is talking to whom about what for how long)
    - Mark off predetermined checklist events
    - Add comments/annotations
    - Score critical events/errors (positive or negative)
    - Rate communication between team workers

All scores and events are time-stamped, for later synchronization with digital video recordings of the session (optional).

2. Review and Rescore Recorded Cases:
    - Watch digital files (up to 4 audio/video feeds) simultaneously with previously scored events
    - Modify/create scores at that time

3. Real-Time Viewing of Streaming Videos
    - Watch up to 4 streaming audio/video feeds "real-time" over the internet, and score events

4. Data Analysis
    - Not implemented yet. All data is stored in a Microsoft Access Database.

Disclaimer

This software has been developed at the University of Virginia to conduct research on team performance in the hospital operating room. We make no claims or guarantees as to its use. We have tried to make the software somewhat customizable for other uses, and therefore make the software available to you at no charge so long as it is used for non-profit purposes. Any interest in using this software for commercial (for profit) use should be addressed to Stephanie Guerlain at the contact information above. This material is based upon work supported by the National Science Foundation under Grant No. 0092985. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

System Requirements

Pentium III, 1GHz, recommend 256M RAM, 32M video RAM.
Windows 95 or greater operating system

Installation

1. Download the software from http://hsc.virginia.edu/stsl/ (click on Tools and fill out the form completely)
2. Unzip the file, double click setup.exe to start the installation.
3. Be sure both RATE.exe and RATE.mdb are stored in C:/Program Files/RATE

Quick Start

RATE can be started as other common software by double clicking its icon.

Log In

The Login Screen is shown in Figure 1.

1. Enter the User ID (currently stsl)
2. Enter the Password (currently patient)

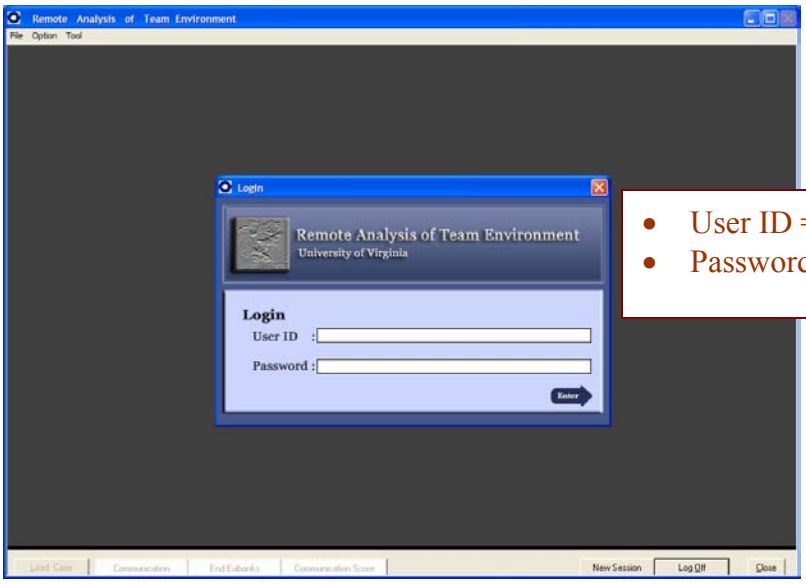

Figure 1. The Login Screen

New Session

After login, you will be brought to the New Session Screen (see Figure 2). The system will provide three options to choose:

- New Case (for creating or opening a scoring window without videos)
- Load Case (should say Load Videos!)
- Real-Time Viewing (for watching video(s) being streamed over the internet)

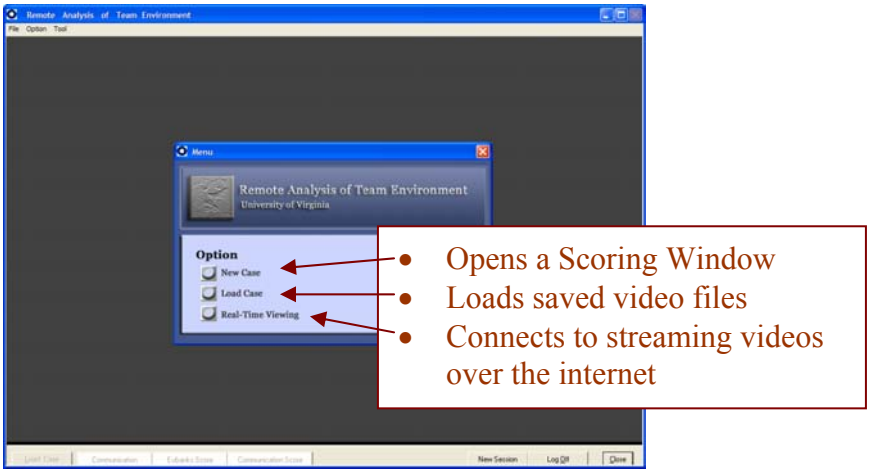

Figure 2. The New Session Screen

New Case

New Case enables you to score a "case" (team session). We generally score a case using this feature while watching the session "live", while simultaneously using other hardware/software to digitally capture 4 video feeds of that session. We name those digital video files with the same Case ID as the Case ID we use to score the case (e.g., if the Case ID is 123, we name our 4 digital video files 123r1.mpg, 123r2.mpg, 123r3.mpg, and 123r4.mpg respectively).

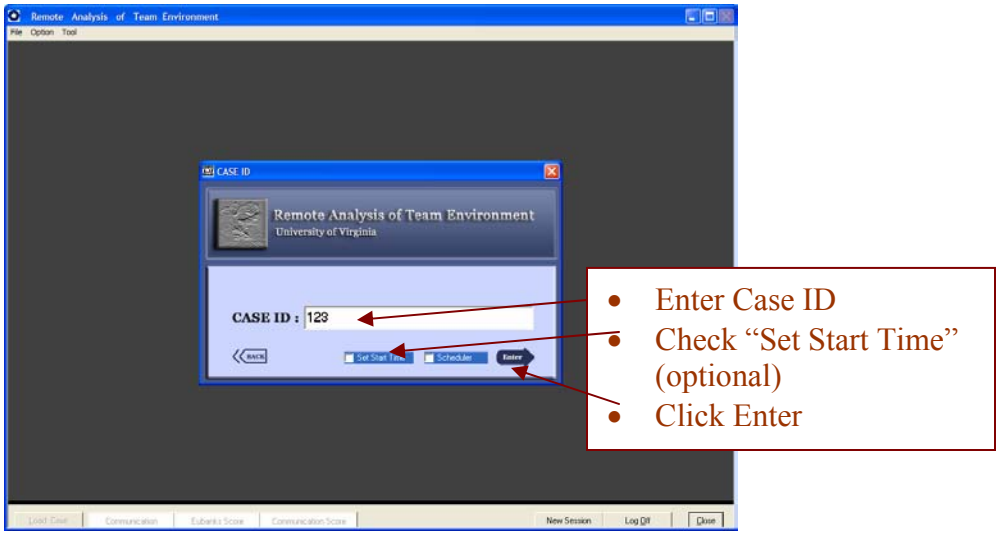

Figure 3. The Enter Case ID Screen

To create a New Case:

1. Select New Case from the New Session Screen (Figure 2).
2. Type in a case ID for the scoring session (Figure 3). This can be any alphanumeric you want, but should match your video file names if you are recording digital videos at the same time (on another computer – see note above).
3. Note that the Scheduler check box is not functional yet. If you check the Set Start Time box (optional), you will be brought to the Set Start Time dialog (Figure 4), where you can set the time at which logging will begin. This should be done if you want to synchronize your scoring session with the digital video capture of the session. (e.g, first start the digital video capture on your digital video capture computer(s), then set the start time on your scoring computer to be sometime after that. Then, once in the Scoring Screen, hit Start when the digital video recording on the digitizing computer(s) reaches the Start Time on your scoring computer so that your scores are synchronized with the digital video(s).)
4. Click Enter. You will be brought to the Scoring Screen (Figure 5).

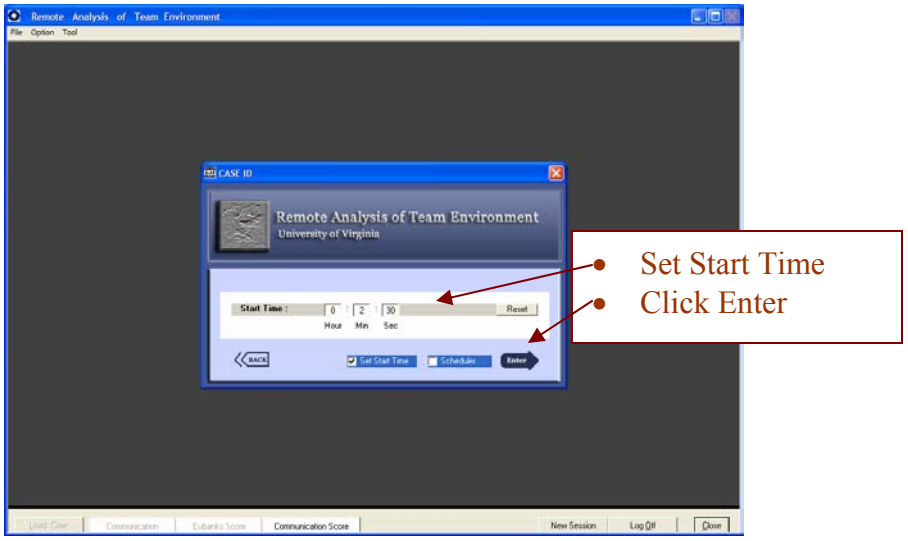

Figure 4. The Set Start Time Screen

Score a Case

To score a new case:

1. Click the Start button at the upper left corner in Figure 5, which will start the timer and enable all the scoring features.
2. Score and/or edit scoring features as desired (how to do this is described below). All scoring is saved immediately.
3. Click Close to Close the program or New Session to go back to the New Session screen when finished scoring/editing.

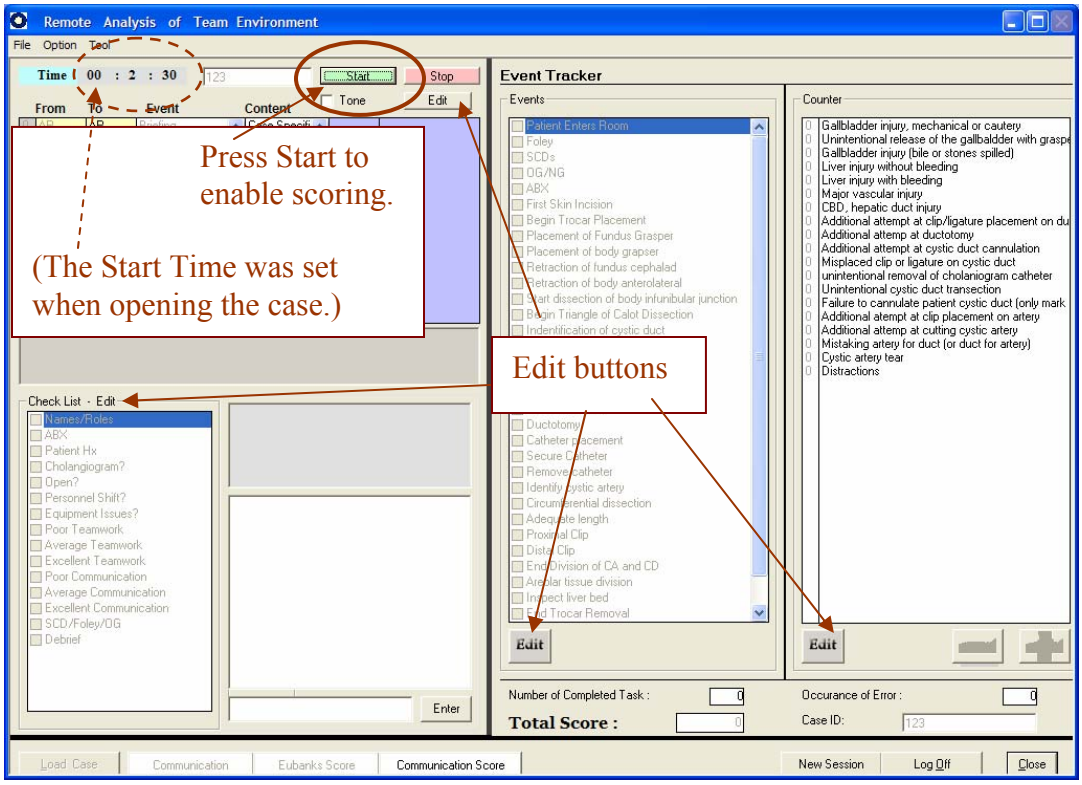

Figure 5. The Scoring Screen

Reload a Case into the Scoring Window

To reload a previously scored case into the Scoring window:

1. Select New Case from the New Session Screen
2. Type in the case ID for the session you would like to reload.
3. Check the Set Start Time box (optional
4. Click Enter.
5. The system will say that the Case ID already exists and ask if you want to load anyway. Select Yes. You will be brought into the Scoring window with the previously marked events already entered.

Summarize Conversations

In the Scoring window, the Conversation Scoring is located at the upper left corner as shown in Figure 6. The position will be different in "Load Case" (video watching) mode (see Figure 16); however, the interface and operation is totally the same.
This interface will allow you to mark who is talking to whom about what topic and at what time.

To record that "AA" (anesthesia attending) is teaching "AR" (anesthesia resident):

1. Click "AA" in the "From" list, click "AR" in the "To" list and "Teaching" in the "Event" list respectively.
2. Click "Talk" or double click "Teaching", and a description of "AA-AR Teaching" is shown in the right rectangle list along with the start time of the conversation.

3. To end the conversation, double-click the "AA-AR Teaching" in the right list, and the conversation end time will be marked, and the text will be moved into the bottom list.

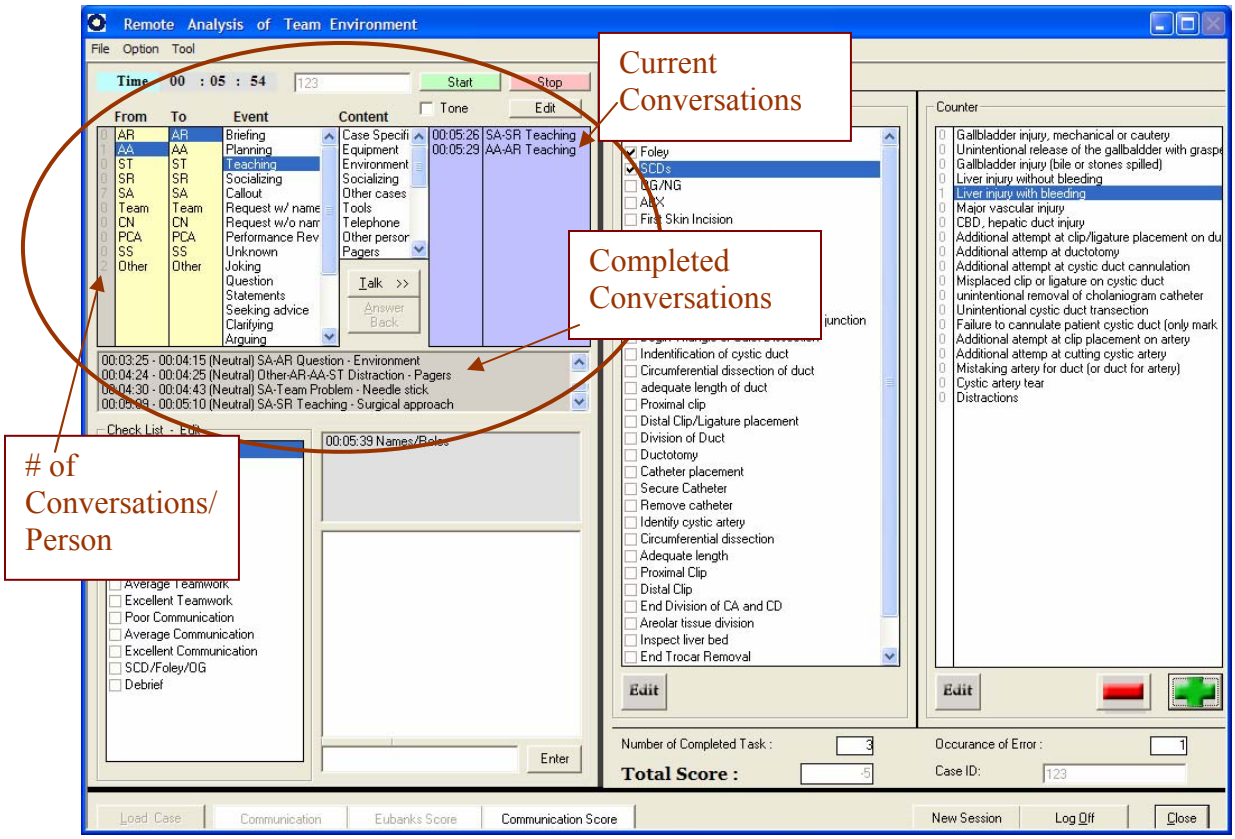

Figure 6. Summarize Conversations

To record "SR" requested equipment from "ST" and "SR" answered back:

1. Click "SR" in the "From" list, click "ST" in the "To" list, click "Request w/ Name or Role" in the "Event" list and click "Equipment" in the "Content" list.
2. Click the "Talk" button or double click on "Equipment" and a description of "SR-ST Request w/ Name or Role - Equipment" is shown in the current conversation list along with the start time of that conversation.
3. Click (not double-click) "SR-ST Request w/ Name or Role - Equipment" in the right list to select it.
4. Click "Answer Back". A window will pop up to ask if the answer back was adequate or not.
5. Click "Yes" or "No". The text "SR-ST Request w/ Name or Role - Equipment" will be moved into the bottom list. Another text of "ST- SR answered adequately/inadequately to SR's question" will be added automatically in the bottom list.

Hints:

- "To" list subjects can be multiple selected by clicking the subjects and holding the "Ctrl" key.

- The "Tone" check box can be checked, which will cause a dialogue box to appear asking whether the tone was positive or negative for a given conversation.
- The "Edit" button can be selected to edit conversation topics or team members (see next section).
- A Current Conversation will automatically be moved to the Completed Conversation list if you start a new conversation by the same person.

Edit Team Members and Conversation Topics

All the subjects and event topics are editable by clicking the "Edit" button above the "Event" list. Subjects and Events can be added or deleted, as shown in Fig 7.

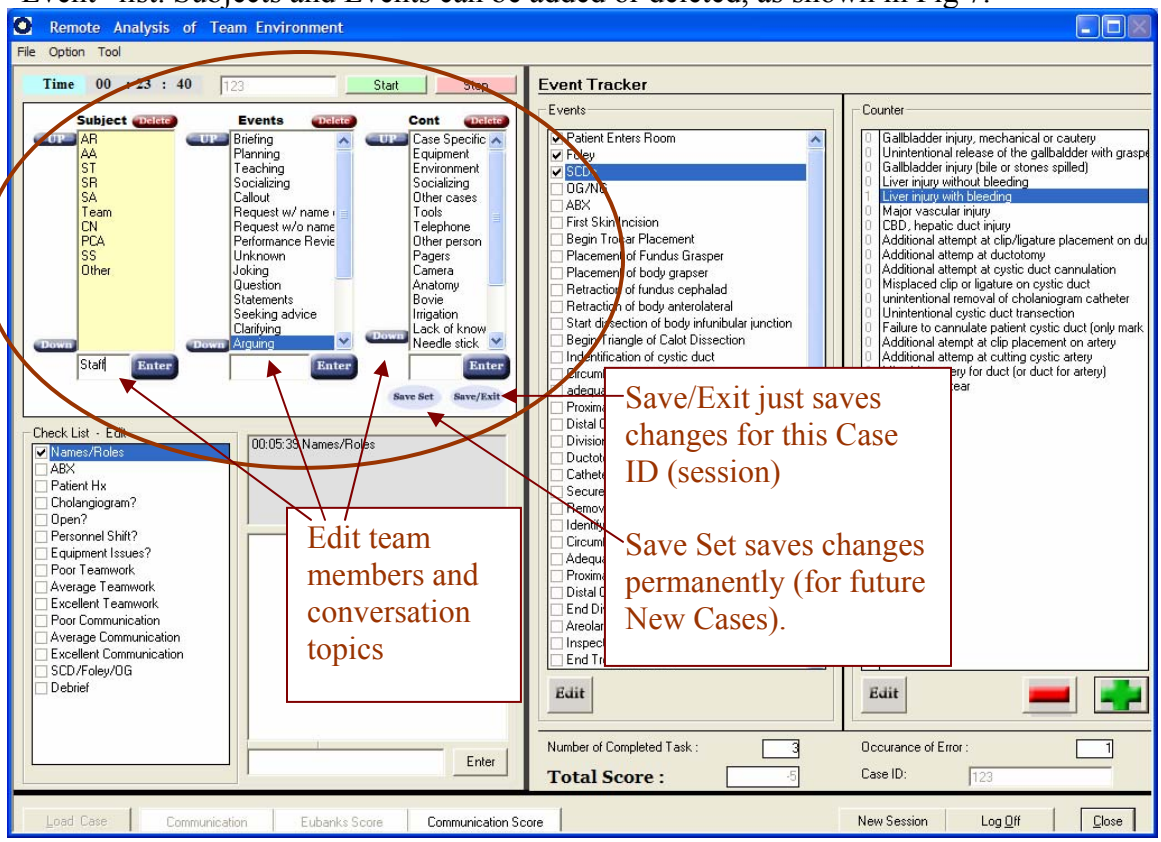

Fig. 7. Edit Team Members and Conversation Topics

1. To add personnel, type the name of the person or role in the text box below the Subject column. Click Enter.
2. To delete a person or role, select that person or role and Click the Delete button above the Subject list.
3. To move a person/role up or down in the list, select that item, then click on the Up and Down buttons.

The Events and Content lists work exactly the same as the Subject list.

Hint:

- To permanently save the changes for all future cases, click the Save Set button. To just save this list for this case, click the Save/Exit button.

Check list and Annotation

Check list records the critical events happening. It is different from the "Event Tracker", in which completed tasks and errors are scored with different weights.
Check list is located at the bottom left in "New Case" session, as shown in Figure 3. Annotation is located beside the Check list, which enables the observer to input text comments at any time. The locations will be different from that in "Load Case" session (see Figure16); however, the interface is the same.

To record "ABX":

1. Click the box before "ABX"

To cancel the record of "ABX":

1. Unclick the box before "ABX"
2. Confirm the cancel in the Pop-up window by clicking "Yes"

To add a comment:

3. Type comment (max 256 characters) into the annotation text box. Click "Enter".

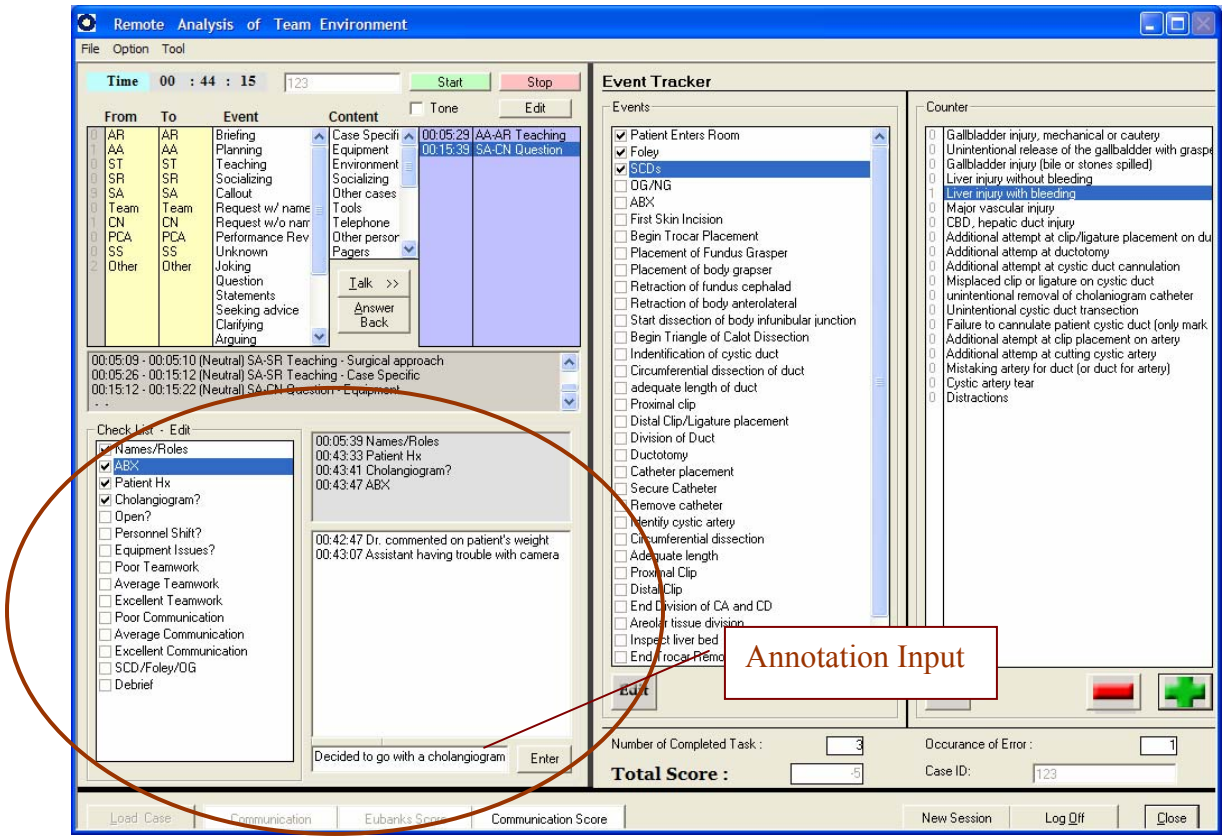

Figure 8. Checklist Scoring and Adding Annotations

To edit the check list events

1. Click the "Edit" button above the checklist
2. The edit window will be shown as Figure 8
3. Check list events can be added, deleted and adjusted up or down in the sequence
4. After editing, click "Save Set" to permanently save your changes or "Save/Exit" to just save the changes for this Case ID.

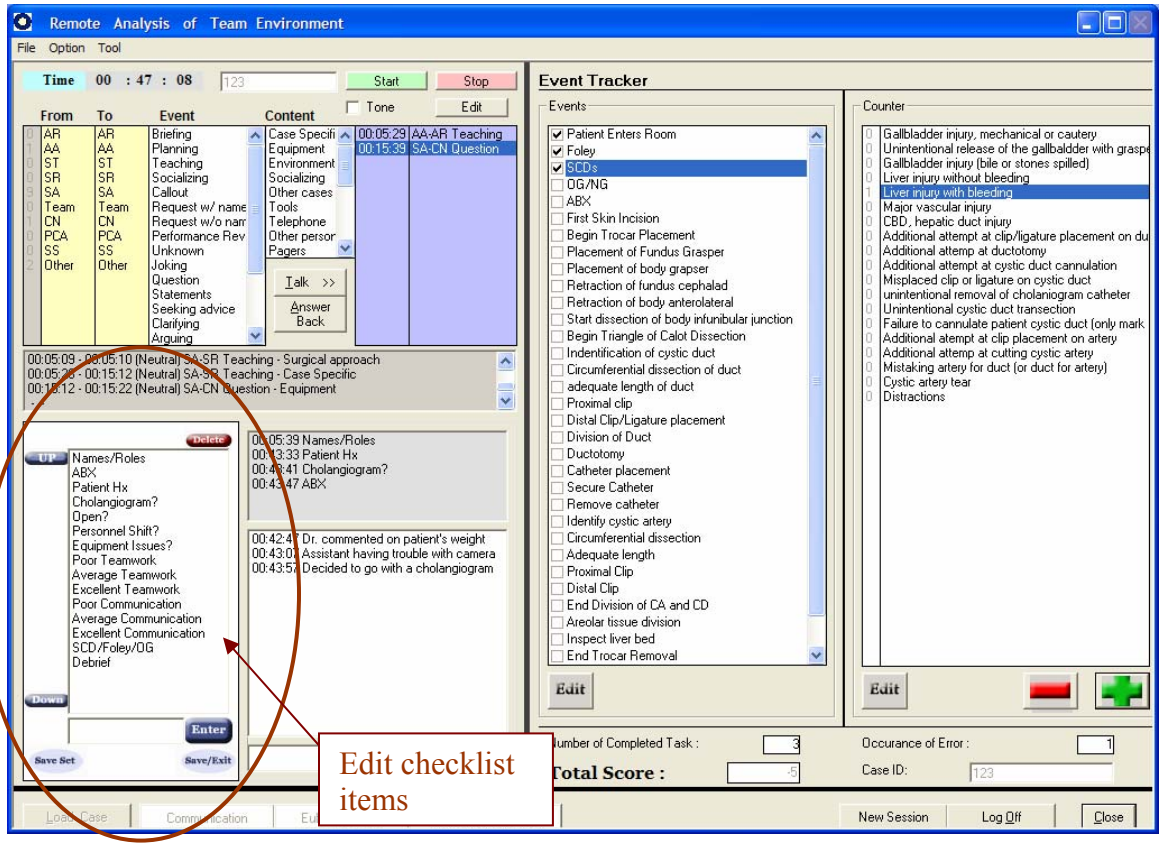

Figure 9. Checklist editing

Event Tracker

Event Tracker counts the occurrences of completed tasks (with optional positive scoring for each task) and the occurrences of errors (with optional negative scoring), which will give an overall score to the whole procedure. Completed tasks and errors can be edited as required. Event Tracker is located on the right side of the window, as shown in Figure 10. The left part is the completed task tracker; the right part is the error counter. The completed task will be recorded only once, however, multiple errors can be recorded.

To record completed task of "Catheter placement":

1. Click the box before "Catheter placement"

To cancel the record "Catheter placement":

1. Unclick the box before "Catheter placement"
2. Confirm the cancel in the Pop-up window by clicking "Yes"

To record the error of "Liver injury with bleeding" twice

1. Click the event of "Liver injury with bleeding"

2. Click the "+" button at the bottom of the counter list twice

Or

1. Double click the event of "Liver injury with bleeding" twice

To cancel the record of "Liver injury with bleeding" once

1. Click the event of "Liver injury with bleeding"
2. Click the "-" button at the bottom of the counter list

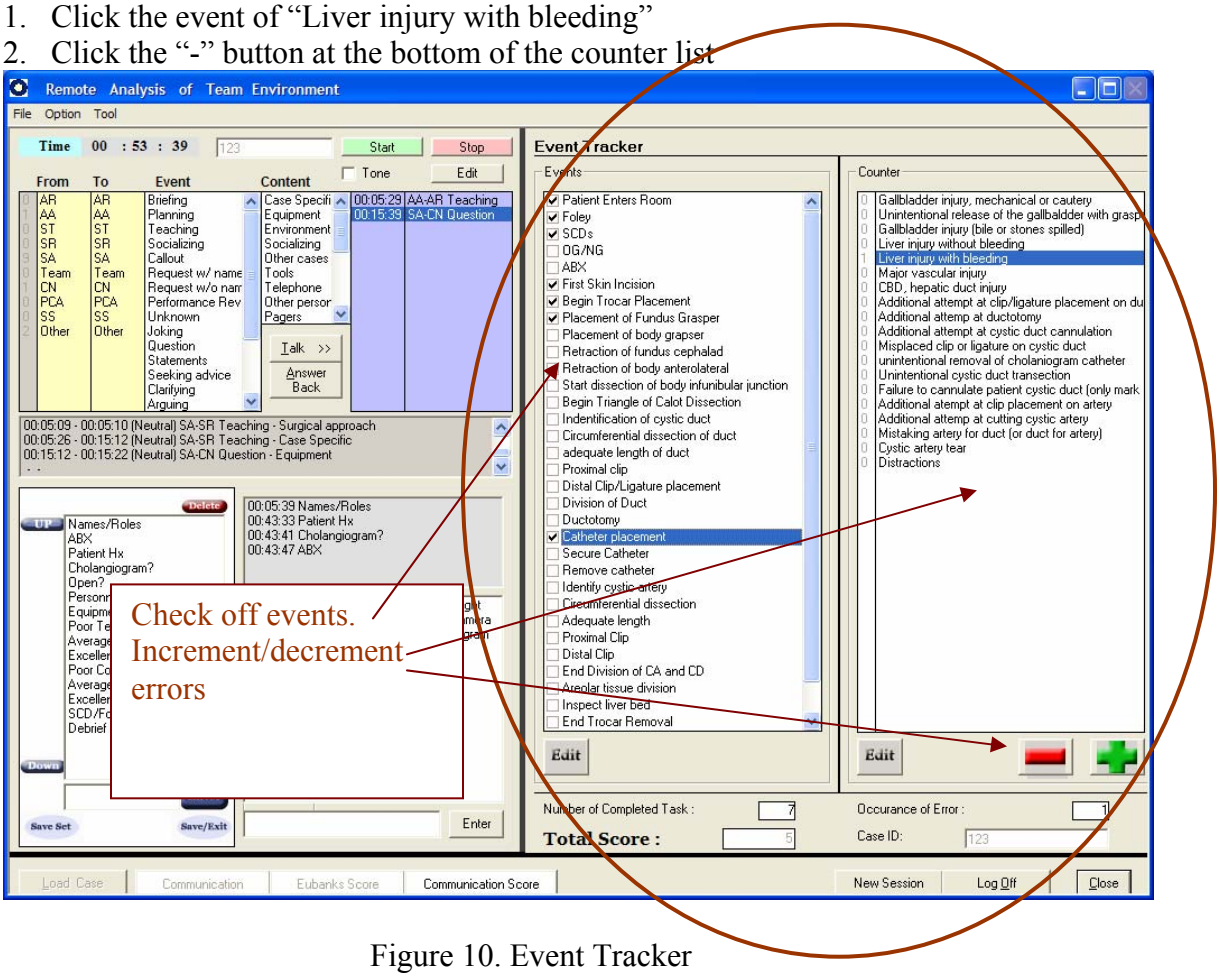

Figure 10. Event Tracker

To edit the completed tasks and errors:

1. Click the "Edit" button at the bottom of the "Events" or "Counter" list, as shown in Figure 10.
2. Enter new tasks or errors and give them an associated "point values" using the bottom text boxes, as shown in Figure 11.
3. Delete existing tasks or errors by clicking on them and then clicking "Delete".
4. Move existing tasks or errors up or down using the "Up" and "Down" buttons
5. Click "Save Set" to permanently save the changes for all future cases, or "Save/Exit" to save just for this Case ID.

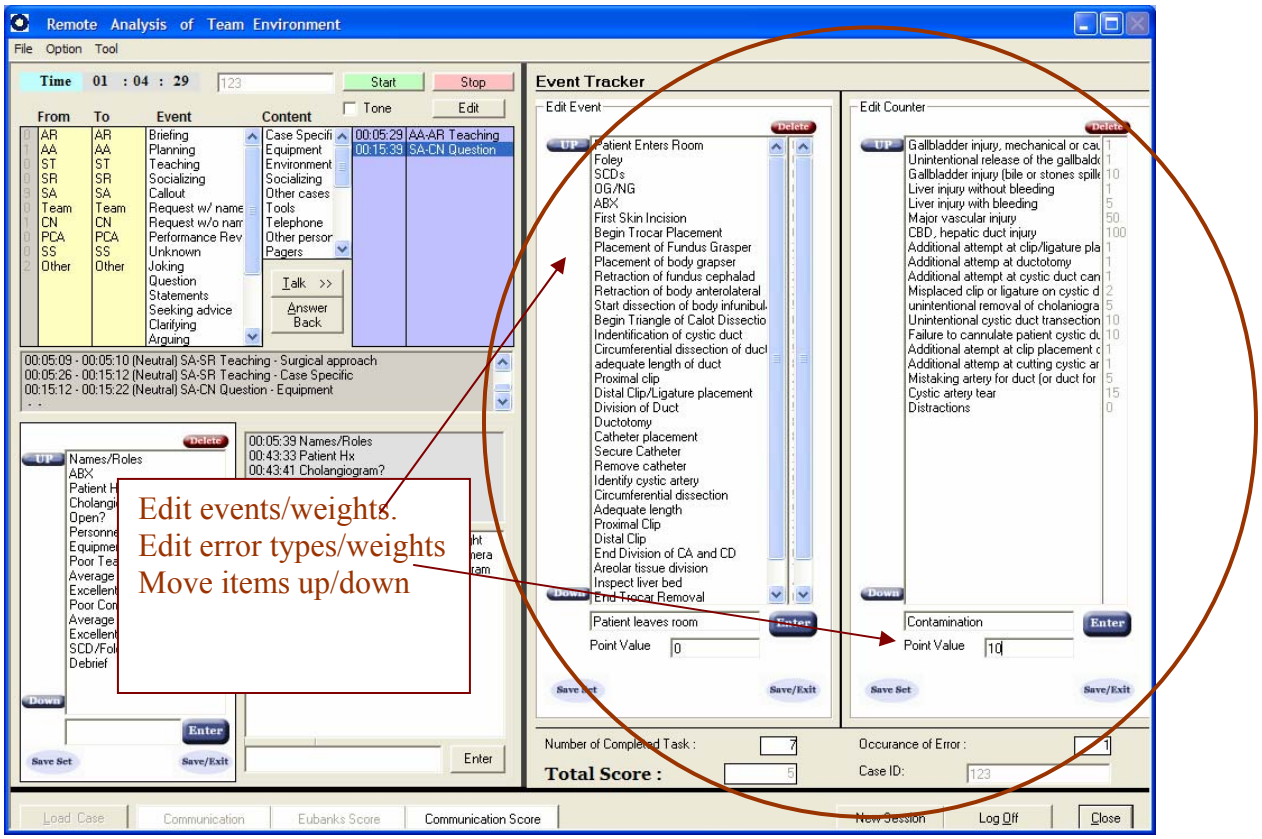

Figure 11. Events and Error Counter in Edit Mode

Communication Score

Communication Score in RATE is a tool to score communication events by scales (e.g., Not Done, Incomplete, Well Done" or "Low, Medium, High". Use the "Communication Score" button (the caption of the button will be changed to "Saving Score") at the bottom of the screen (see Figure 11) to switch the "Event Tracker" to "Communication Score" window, (as shown in Figure 12).

To score the communication

1. Click the Communication Score button at the bottom of the screen (Figure 11) to bring you to the Communication Rating screen (Figure 12).
2. Rate the communication
3. Click "Save" to save the score result to the database or "Cancel" to exit the "Communication Score" window without saving

To edit the score event types

1. Not implemented yet.

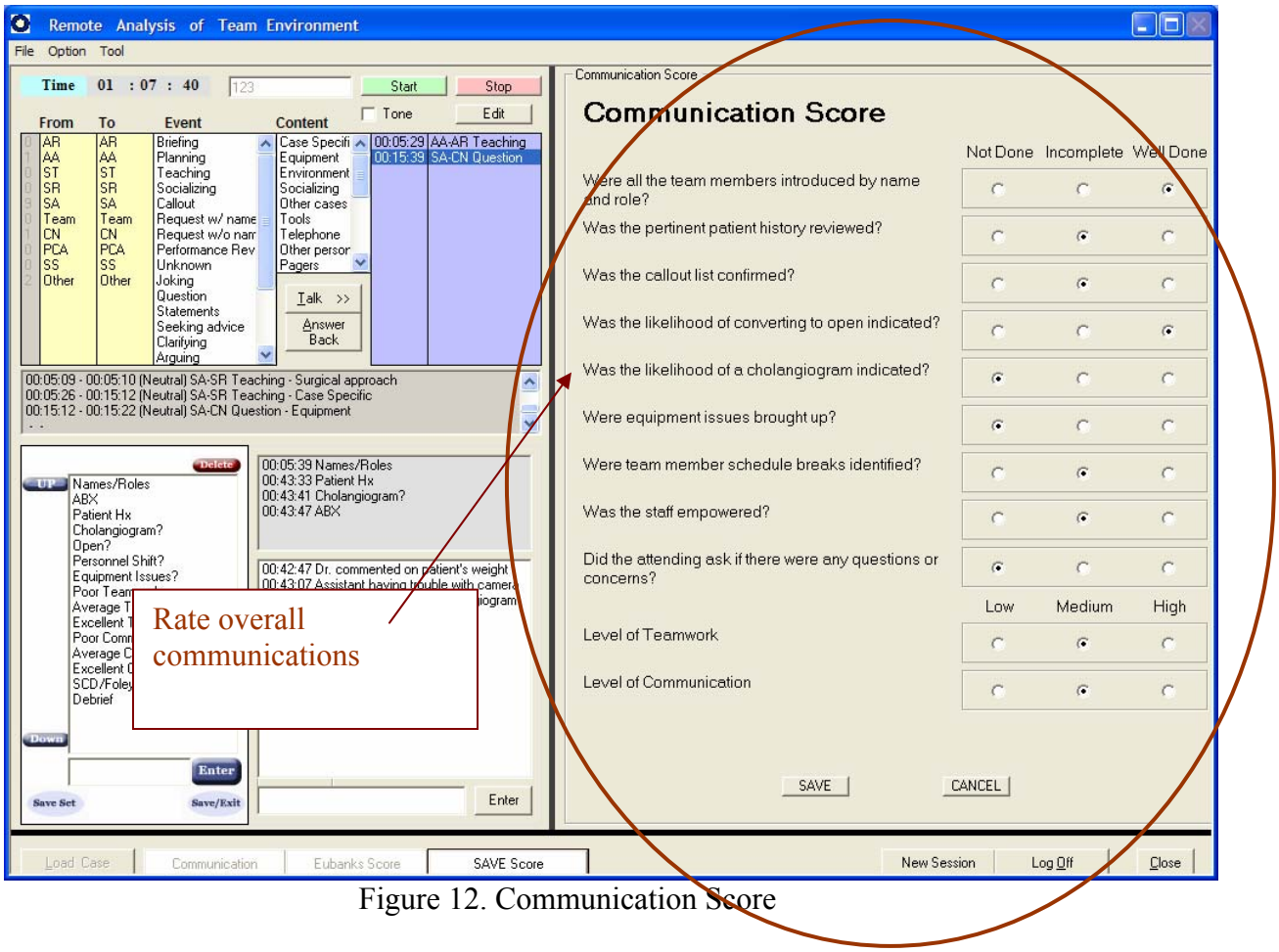

Figure 12. Communication Score

Save and Exit a Scoring Session

All data is saved as you work.

1. Click the "Close" button at the bottom of the window to exit the program.

OR

2. Click "New Session" to go back to the New Session window (Figure 2).

Load and Review Videos for a Case

1. To load and review videos for a case, choose "Load Case" from the menu after login
2. Locate the video files of the saved case, as shown in Figure 10. Those videos (and only those videos) that you would like to load simultaneously should be in the same folder. RATE will attempt to load all the videos in a folder that you select. Click "Load".

   OR
3. If the multiple videos you would like to load are in separate folders, click the "Load Separate" button. This will enable you to browse and select a video file for each of the four video windows separately (see Figure 11).
   - The four videos will be synchronized based on file creation time, and the 2nd 3rd and 4th videos will synchronize with the first video loaded. Thus, when digitizing the videos, the computers that are digitizing the video should have synchronized clock times to the extent possible. (Use the About Time" utility to set the times of the computer clocks to assist with this process).
4. The 4 video files will be loaded as shown in Figure 15. **RATE will also look for previously scored case information about that video by using the name of the video file.** For example, a video file named "12345r1.mpg" will cause RATE to look for scoring information for Case ID # 12345 in RATE.mdb.

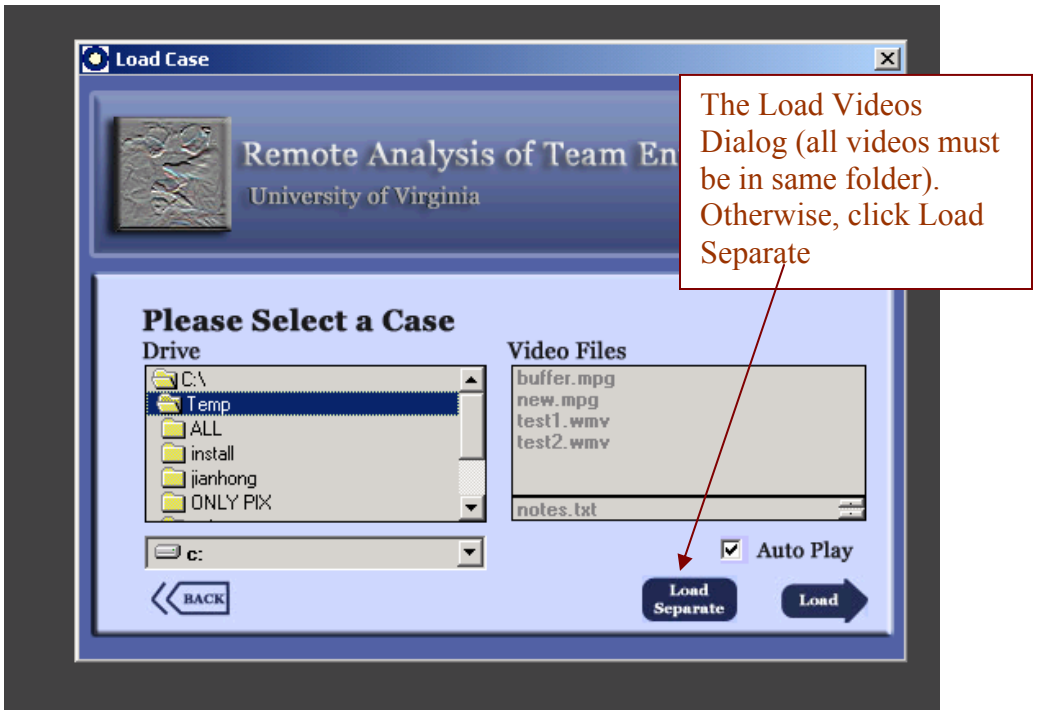

Figure 13. Load Videos Together Dialog

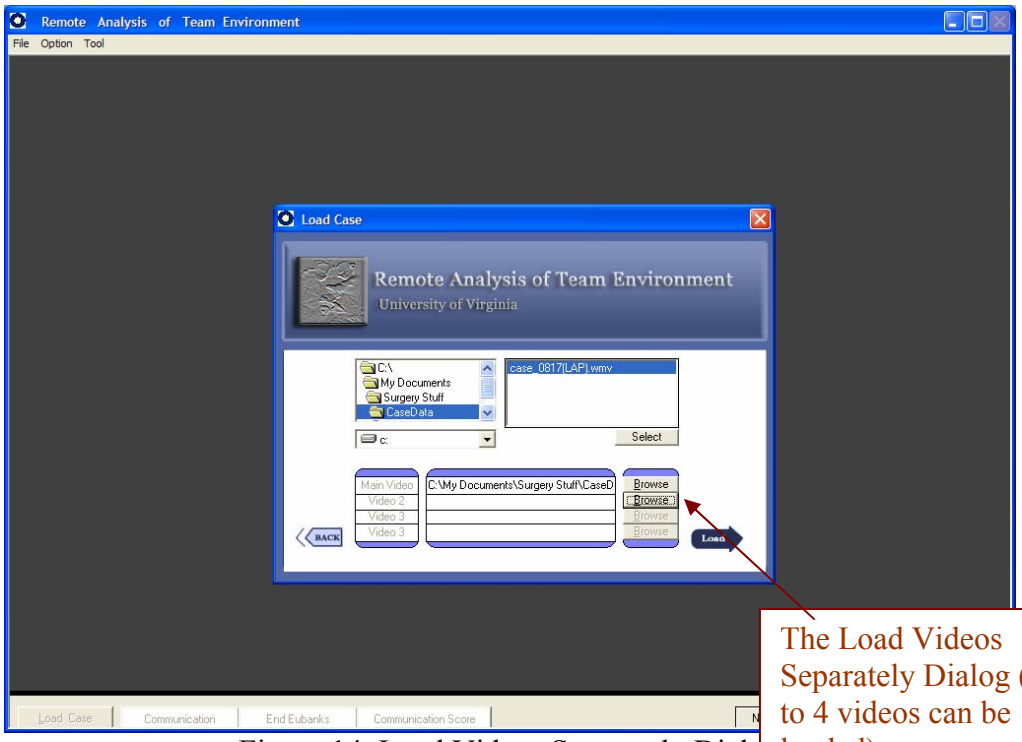

Figure 14. Load Videos Separately Dialo

Watch Videos for a Case

1. The operation of the video watching is the same as Windows Media Player (Figure 15).
2. You can set what scores are shown on the main page by selecting from the drop-down list (Communication, Annotation, Eubanks, All) (Figure 15).
3. You can selectively mute or enable the audio from the backup videos (Figure 15).
4. To get an alternate view of the information, focusing on communication aspects, click the Communication button to enable the "Conversation" score window (Figure 16).
5. Click "Eubanks" to enable the "Event Tracker" window (Figure 17).
6. Click "Communication Score" to enable the "Communication Score" window (not shown).

Scoring in those windows works as in the Scoring Case window. Double-clicking on an event will jump all the videos to that point (minus several seconds to enable reviewing it).

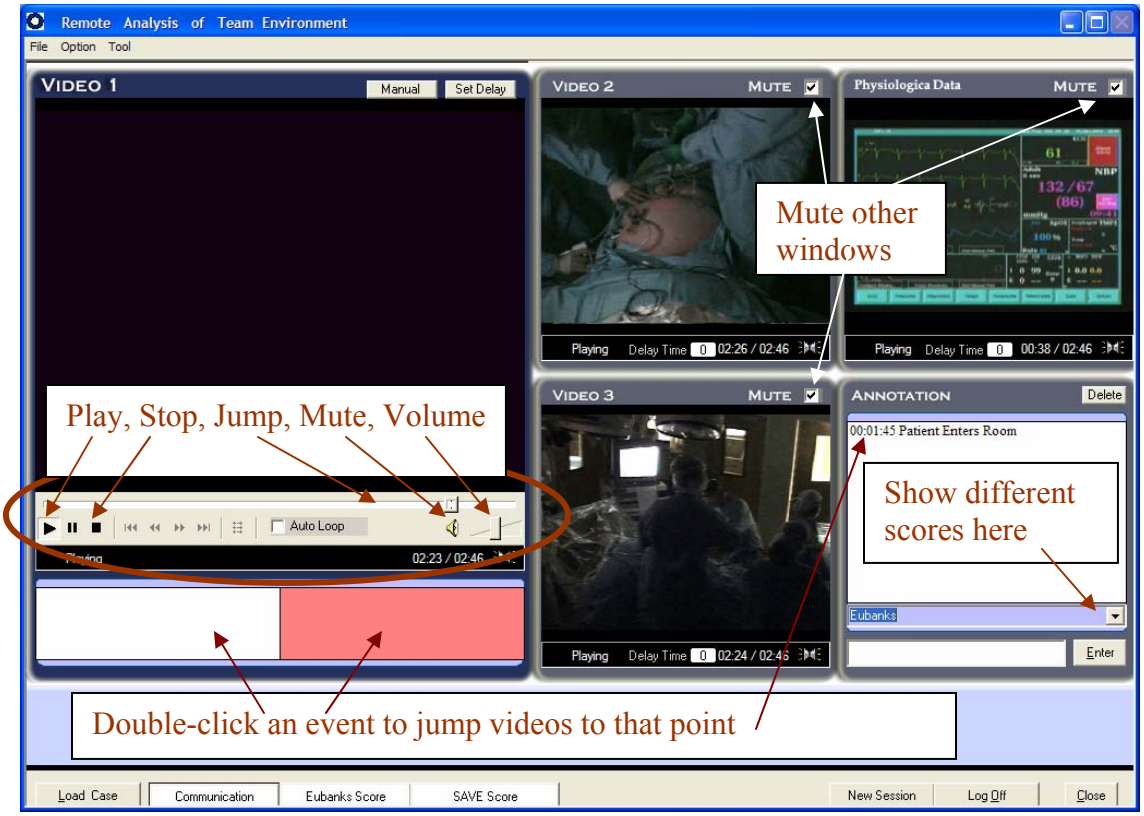

Figure 15. Video Watching – Standard

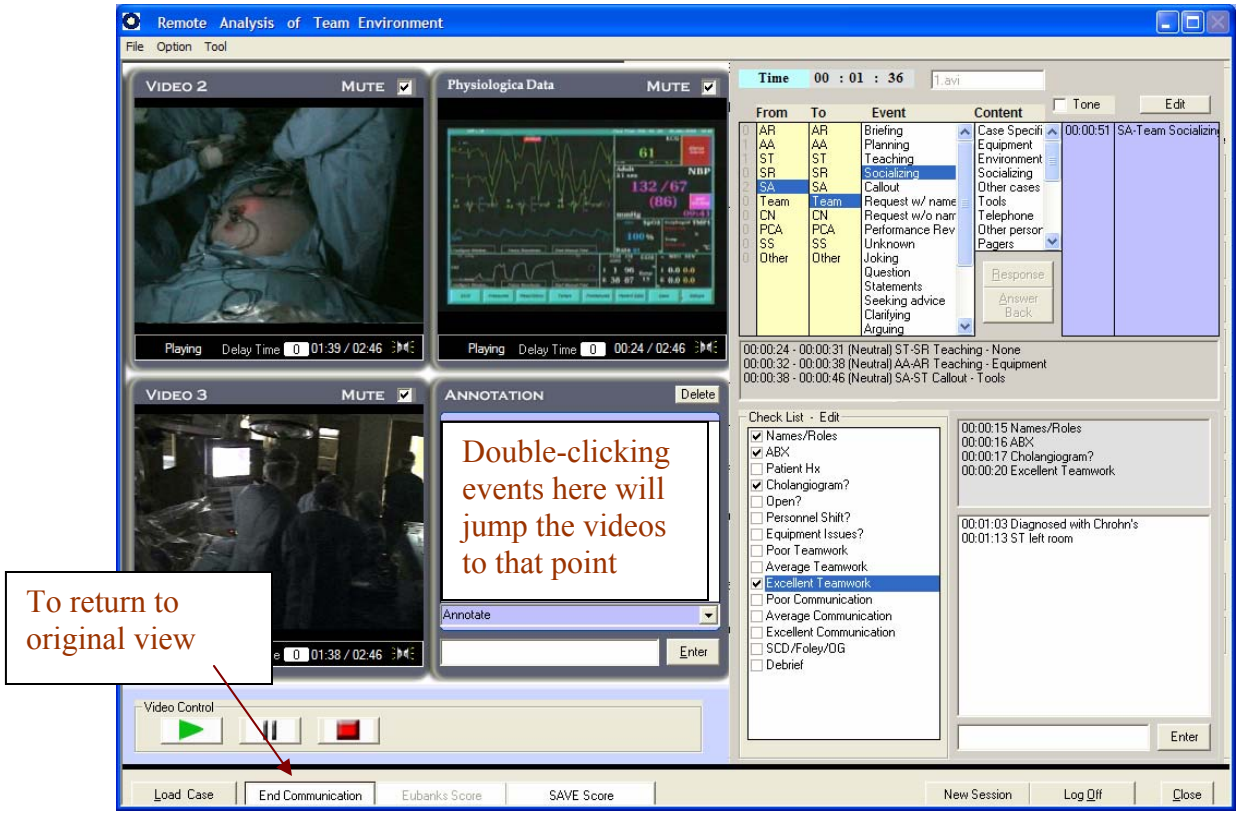

Figure 16. Video Watching – Communication Mode

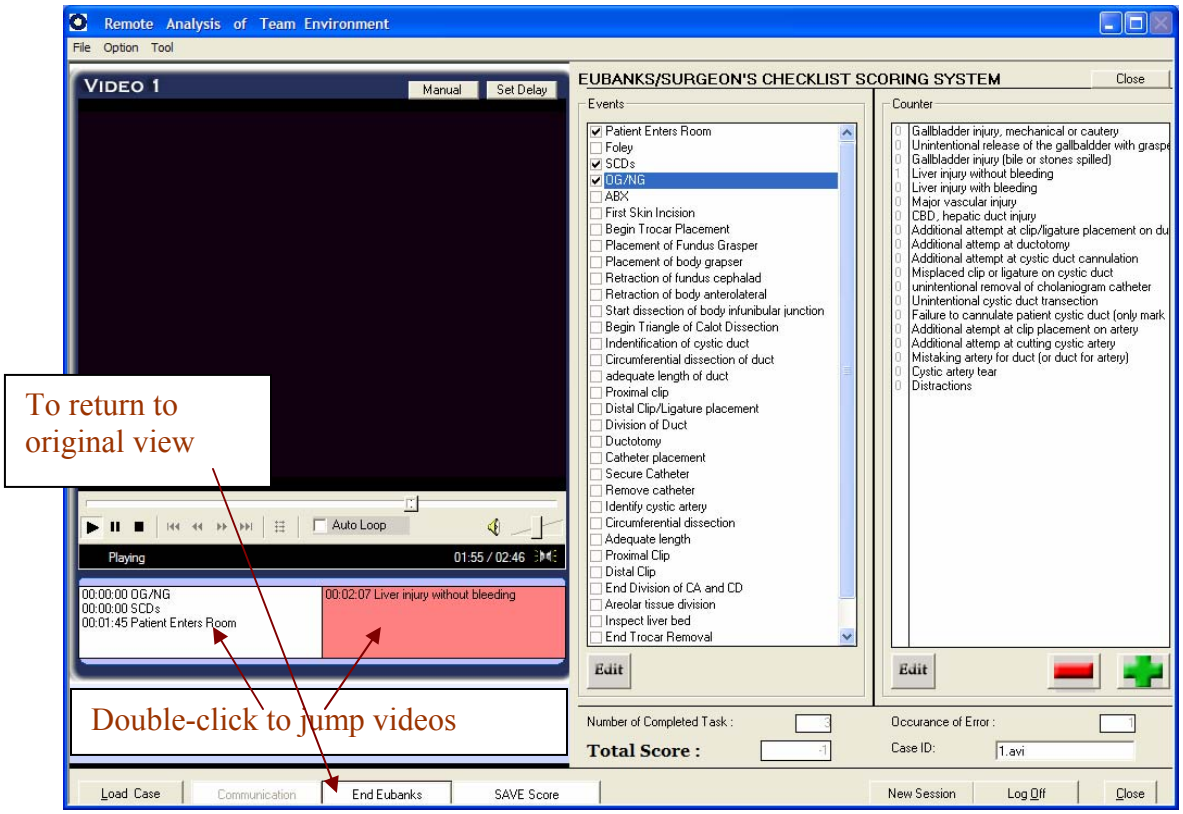

Figure 17. Video Watching – Eubanks (checklist) Scoring Mode

Current Known Bugs/Unimplemented Features/UI Quirks:

(we are continuously updating the program/manual)

- Eubanks = Event Tracker (Eubanks is the name of the scoring system we're using. We'll change that eventually to just say Events everywhere.)
- You can't reset the Start Time once in the Scoring Window (must click New Session and reenter Case ID and Set Start Time under "New Case).
- Conversations/annotations can't be edited/deleted once entered.
- The Total Score is incorrect
- The Case ID may need to be added manually to the RATE.mdb CaseTbl.
- The Pause Button does not work while watching videos
- Two videos sometimes play on top of each other in video watching mode
- Videos in .wmv (windows media format) take a long time to scroll. Videos in .mpg format jump around instantaneously (this is a Microsoft "feature", not a RATE bug).
- There is no way yet to track who is scoring or to merge/compare scores.

Comments/Questions:

Address to: Stephanie Guerlain, contact info on Page 1 of this manual.

Send us an email if you'd like to be on the distribution list for future updates.